NEW SPECIES IN THE GENERA BDELYROPSIS, CRYPTOCANTHON AND DREPANOCERUS (COLEOPTERA: SCARABAEIDAE)

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ABSTRACT—Four new species of Scarabaeidae are described and figured. These are *Bdelyropsis* **venezuelensis** from Venezuela, *Cryptocanthon* **altus** from Colombia, *Cryptocanthon* **newtoni** from Mexico, and *Drepanocerus* **pecki** from Jamaica.

Four new species in three scarab genera, *Bdelyropsis*, *Cryptocanthon* and *Drepanocerus* are described. All of these genera have been recently revised (Howden, 1971, 1973; Matthews, 1966) and the present species can hence be described and related to others fairly easily. All three genera are of interest since they seemingly represent relict New World groups that have only relatively recently become known.

Bdelyropsis venezuelensis Howden, new species
fig. 1–3

Holotype: Female, length 5.7 mm, greatest width 3.6 mm. Color dull black dorsally, black to brownish black ventrally with legs dark reddish brown to black. Clypeus (fig. 1) abruptly bidentate anteriorly, disc nearly smooth and shining, posterior margin delimited by a slightly tumid transverse line. Frons and vertex finely punctate, the punctures larger posteriorly. Eyes as in *bowditchi*. Pronotum finely punctate, punctures similar to those on vertex between eyes; surface between punctures granulate. Punctures (fig. 2) on head, pronotum and elytra, each with 1 central, minute, scalelike seta. Pronotal and elytral shape (fig. 3) similar to *bowditchi* (fig. 4) but slightly more convex. Scutellum absent. Elytron with 7 dorsal strial lines narrower and more conspicuous than in *bowditchi*; humeral umbone distinctly elevated, carinate as in *newtoni*. Pygidium differing from both *bowditchi* and *newtoni* by having apical area inside incised line tumid and shining. Legs and ventral surfaces generally similar to females of *bowditchi* and *newtoni* except that apical abdominal segment medially with a vague, shining, triangular area contiguous to pygidial apex.

Male: Unknown.

Type-Material: Holotype, female, Venezuela, Edo. Aragua, Cerro el Cafe, 1200 m, 10 km N. W. Valencia, 23–26 February 1971, S. Peck, forest human dung trap (Howden). Paratypes: 2 ♀♀, same data as holotype (Howden).

Variation in the three females is slight. Size ranges from 3.1 to 3.7 mm. The clypeal teeth of one female are badly worn, and in one specimen the elytral color is distinctly greenish black.

The minute scalelike setae (fig. 2) in the dorsal punctures will

readily separate *venezuelensis* from either *bowditchi* Paulian (1939) or *newtoni* Howden (1971) since both have distinct, upright, dorsal setae (fig. 4).

Cryptocanthon altus Howden, new species
fig. 5–7

Holotype: Male, length 4.1 mm, greatest width 2.9 mm. Color black with head, pronotum, antennae, mouthparts, and legs very dark brown. Body oval (fig. 5), elytra conjunctly strongly convex. Head similar in shape and punctation to *C. brevisetosus* (see fig. 10, Howden, 1973); the 2 clypeal teeth well separated, anterior face of emargination between teeth broadly V-shaped, medially concave, lacking distinct fovea (fig. 6). Clypeus with lateral margins slightly arcuate; disc moderately reflexed near teeth, surface coarsely punctate, punctures separated by less than 1 diameter. Vertex with punctures smaller and more crowded; many with 1 fine, central, recumbent seta. Eye dorsally, when head retracted, covered by anterior margin of pronotum and not visible from above. Pronotum with length to width ratio 1:2.3; pronotal disc coarsely punctate, punctures separated by slightly less than 1 diameter; most punctures each with 1 fine recumbent seta, punctures not annular, margins indistinct; posterior pronotal angles abruptly rounded, not notched. Prothorax ventral to posterior angles, lacking carina. Elytral striae obsolete, each indicated by 2 feeble, wavy lines; intervals flat; each interval on each side with row of fine, pale, recumbent setae, similar in this respect to *C. brevisetosus* (see fig. 39, Howden, 1973). Lateral inflexed portion of elytron wide, at widest point approximately same width as metasternum between middle coxae; inflexed portion of elytra anteriorly lacking fovea, only epipleural line present, surface otherwise lacking indented lines or distinct punctures. Metathoracic wings greatly reduced, non-functional. Pygidium evenly convex, highest centrally, lacking deep basal indentation; pygidial surface shallowly punctate, most punctures each with 1 fine, pale, recumbent seta; surface between punctures faintly reticulate. Mesosternum and metasternum similar in shape to *C. nebulinus* (see fig. 7, Howden, 1973) but with size and number of punctures reduced. Fore tibia with inner margin expanded in apical ⅓, notched at apical ⅙, thence truncately expanded, similar in this respect to *C. nebulinus* (see fig. 25, Howden, 1973). Hind tibia with inner margin evenly arcuate, not abruptly expanded, bent, or crenulate. Genitalia as in fig. 7.

Allotype: Female, length 3.8 mm, greatest width 3.0 mm. Similar to male externally except that inner margin of fore tibia is not expanded (unmodified) apically and last abdominal sternite is narrower.

Type-Material: Holotype, ♂, Colombia, Norte de Santander, 3000 m, 35 km. S. Chinacota, 10–14 May, 1974, S. Peck, Dung Trap #12 (Howden). Allotype, ♀, same data as Holotype (Howden). Paratypes: 3 ♂♂, 2 ♀♀, same data as Holotype (Howden).

Variation in the small series is negligible; one male measures 4.3 mm in length, otherwise the measurements given for the Holotype and Allotype represent the extremes. The dorsal, recumbent setae may not be typical since all specimens were collected in fluid.

Cryptocanthon altus will key to couplet 7 in my 1973 revision. In

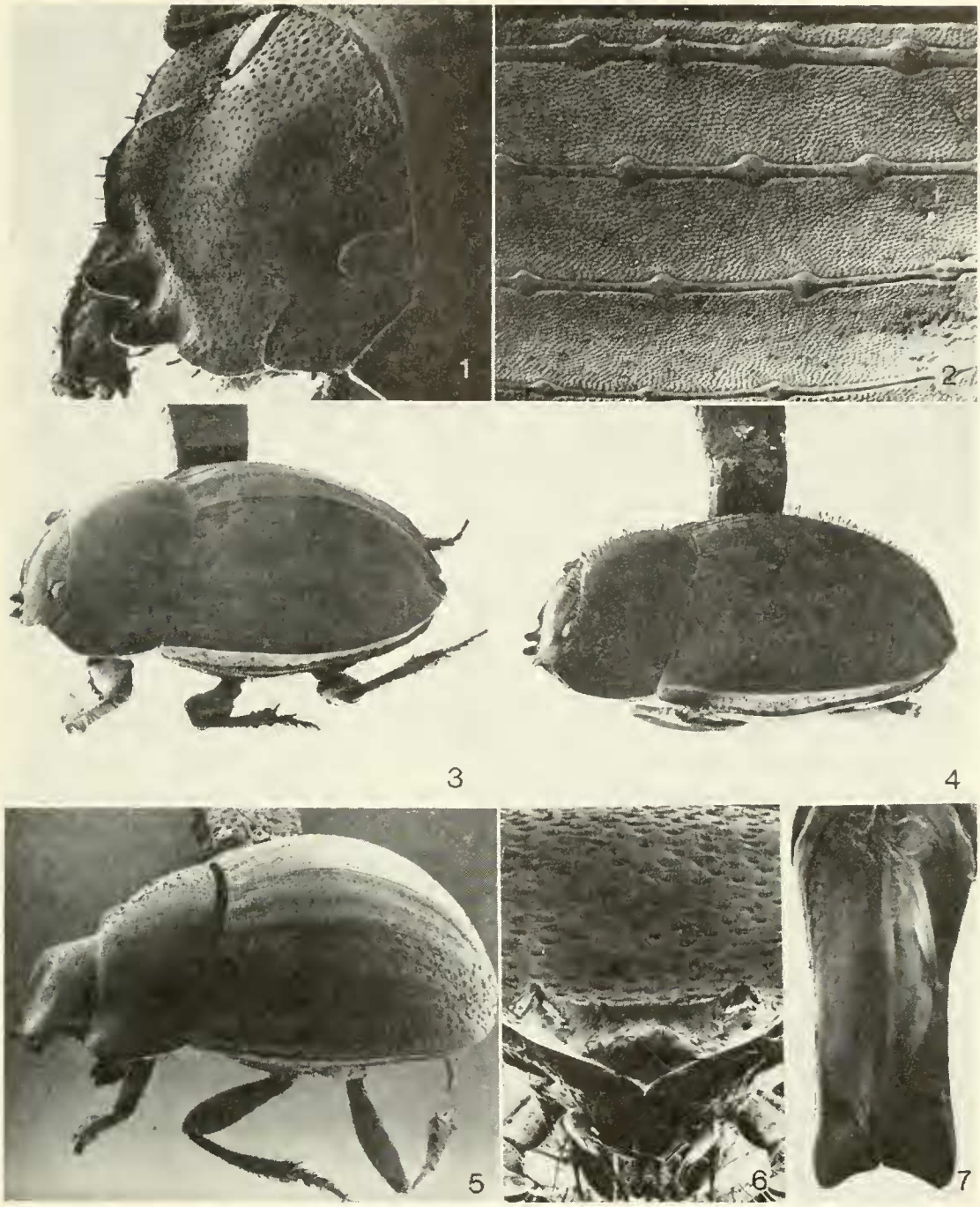

Fig. 1–3. *Bdelyropsis venezuelensis.* 1, Head. 2, Sculpture of left elytron. 3, Female. Fig. 4. *B. bowditchi*, female. Fig. 5–7. *Cryptocanthon altus.* 5, Male. 6, Apical face of clypeus. 7, Male genitalia.

the lack of a fovea in the inflexed portion of the elytron, the shape of the anterior face of the clypeus, pronotal characters and in the shape of the male genitalia, *C. altus* most closely resembles *C. nebulinus* Howden. It can be separated from *nebulinus* and other known species of *Cryptocanthon* by the following combination of characters: clypeal teeth moderately separated, anterior surface between V-shaped and

concave but lacking a deep fovea; lateral clypeal margins slightly arcuate, not lobed; punctures of head and pronotum coarse, separated by less than one diameter, not annular; posterior pronotal angles abruptly rounded, not notched, carina beneath absent; elytra conjointly convex, setae inconspicuous, not erect; inflexed portion of each elytron lacking fovea near anterior margin, only epipleural line distinctly impressed; metathoracic wings greatly reduced; pygidium evenly convex, lacking a deep basal depression; male genitalia as in fig. 7.

The locality where *C. altus* was taken might best be typified as high elevation (3000 m) cloud forest. The specimens were taken in a human dung trap set within a relatively undisturbed patch of forest. The forest floor consisted of a deep mat of moss, decaying vegetation, and plant roots with no soil in evidence where the trap was set. During the period we were in the area heavy rains were frequent. The locality probably receives a high amount of moisture throughout the year.

Cryptocanthon newtoni Howden, new species
fig. 8–16

Holotype: Male, length 3.3 mm, greatest width 2.0 mm. Very dark brownish black, legs and antennae dark reddish brown. Shape elongate, oval; pronotum very convex except near margins. Head as in fig. 10, the 2 clypeal teeth (normally well developed in genus) obsolete, shallowly emarginate between obtuse angles which represent teeth. Anterior face of clypeus between angles with deep fovea (fig. 14) occupying most of surface. Clypeal margins laterally arcuate; disc coarsely, shallowly punctate, punctures mostly separated by 1 diameter or more, most with 1 fine, central seta. Pronotum (fig. 8) unusually tumid medially, length to width ratio 2 : 3.1; disc coarsely, shallowly punctate except along midline and in lateral depressions; each puncture with 1 basally thickened, apically attenuated, arched seta (fig. 9); posterior angles broadly rounded, not notched, carina present ventral to angle and extending anteriorly (fig. 9). Elytral striae obsolete, each vaguely indicated by slightly impressed, double, wavy lines; striae 1, 3, and 5 with inner adjacent rows of distinct upright setae (fig. 16), opposite side of intervals and other striae similarly delimited but with less regular spacing of setae; lateral inflexed portion of each elytron with large basal fovea adjacent to epipleuron (fig. 9); inflexed portion with scattered setae similar in shape to those on pronotum; epipleuron distinctly, abruptly elevated above plane of inflexed portion of elytron, epipleuron with fine setae forming an irregular, longitudinal, double row. Metathoracic wings reduced to elongate knobs. Pygidium (fig. 15) with conical swelling centered at median basal ⅓, deep depression present between swelling and basal margin; pygidial disc vaguely, shallowly punctate, granulate, with scattered, oppressed, whitish setae. Metasternum broadly, shallowly concave between the posterior halves of the coxal cavities; posterior half of metasternum with scattered coarse punctures and fine setae. Fore tibia (fig. 12) with an abrupt, apical, truncate, inward projection on inner

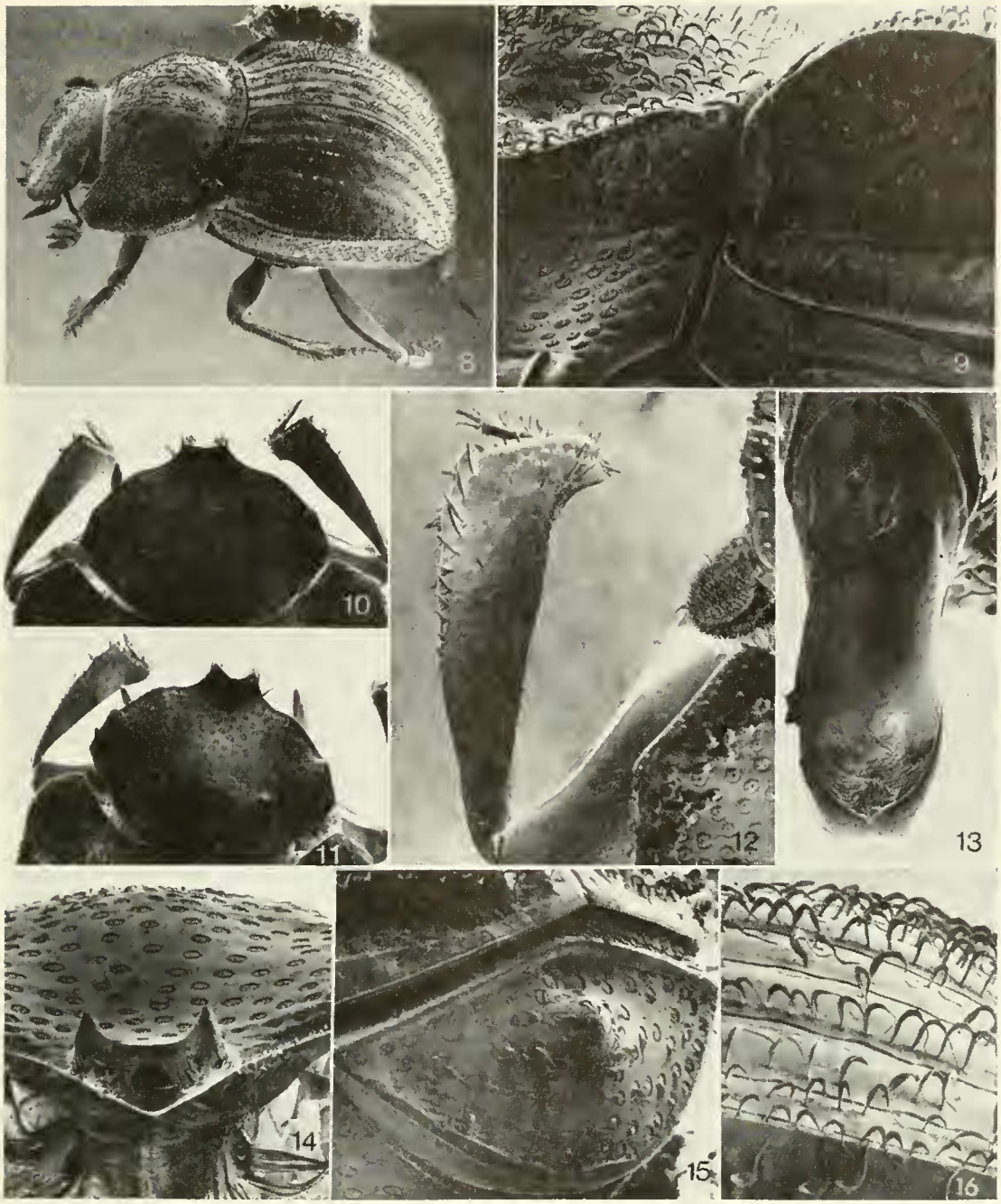

Fig. 8–16. *Cryptocanthon newtoni*. 8, Female. 9, Left side of posterior prothorax and inflexed base of left elytron showing fovea. 10, Head of male. 11, Head of female. 12, Left fore tibia of male. 13, Male genitalia. 14, Apical face of clypeus showing fovea. 15, Pygidium of male. 16, Setae on left elytron.

margin; hind tibia finely serrate on inner margin, the margin bowed and produced inwardly at apex. Male genitalia as in fig. 13.

Allotype: Female, length 3.3 mm, greatest width 2.1 mm. Differing from male in the following major respects: clypeal teeth distinct (fig. 11), apices acutely angled and distinctly reflexed; fore tibia lacking truncate inward projection at apex; hind tibia not abruptly bent and inwardly produced near apex; last abdominal sternite narrower than in male; metasternum only slightly concave medially.

Type-Material: Holotype, ♂, Mexico, Chiapas, 8 mi. N. Pueblo Nuevo S., 6000 feet, cloud forest, 26–27 August 1973, A. Newton, Dung Trap #541 (Howden). Allotype, ♀, same data as Holotype (Howden). Paratypes: 7 ♂♂, 8 ♀♀, same data as Holotype (CNC, Howden, Newton).

Variation is most evident in the characters showing sexual dimorphism, as listed in the description of the Allotype. In males the clypeal teeth are, at most, represented by obsolete angles which are slightly reflexed. In females the clypeal teeth are well developed, acutely angled and reflexed. Also in males the metasternum is more deeply concave while in females it is either flat or slightly concave. Sexual dimorphism in the characters of the tibiae and last sternite are normal for the genus. Size varies only moderately, males measuring 2.8 to 3.5 mm in length and from 1.9 to 2.3 mm in greatest width; females measure 3.0 to 3.5 mm in length and from 1.9 to 2.2 mm in greatest width. Dorsal setae vary in number but this is seemingly largely due to abrasion.

Cryptocanthon newtoni can be distinguished from other species in the genus by the following combination of characters: clypeal teeth obsolete in male, well developed in female, anterior face of clypeus at midline (in both sexes) with a deep circular fovea (fig. 14); pronotum centrally very tumid, conspiculously setose; elytra with deep fovea near anterior margin of inflexed area beside epipleuron; elytra with conspicuous arched setae; pygidium abruptly medially conical at basal third, a deep indentation present between the conical projection and the basal line; male genitalia as in fig. 13. In my 1973 key to the genus, *C. newtoni* will not key past couplet 4. The deep fovea on the anterior face of the clypeus was previously known only for some South American species. The very tumid pronotum and the odd sexual dimorphism of the clypeal teeth are not found in the other species of the genus.

The species is named for Dr. A. Newton, Museum of Comparative Zoology, Harvard, who has collected and given to me many unusual Mexican Scarabaeidae.

Drepanocerus peeki Howden, new species
fig. 17, 19, 21

Holotype: Male, length 8.1 mm, greatest width 4.4 mm. Dorsum dark brown flecked with tan spots. Body shape similar to that of *Drepanocerus reconditus* Matthews (1966, fig. 25). Head (fig. 17) with clypeus emarginate between obsolete, obtusely angled clypeal teeth; disc of clypeus with large posterior transverse carina, with 2nd transverse carina of nearly equal development and length at posterior edge of frons. Dorsal surface of head largely impunctate, few setigerous punctures widely scattered on vertex, and line of setigerous punctures present at posterior margin of vertex. Pronotum sparsely punctate, punctures separated by approximately 2 diameters, each puncture with 1 fine, inconspicu-

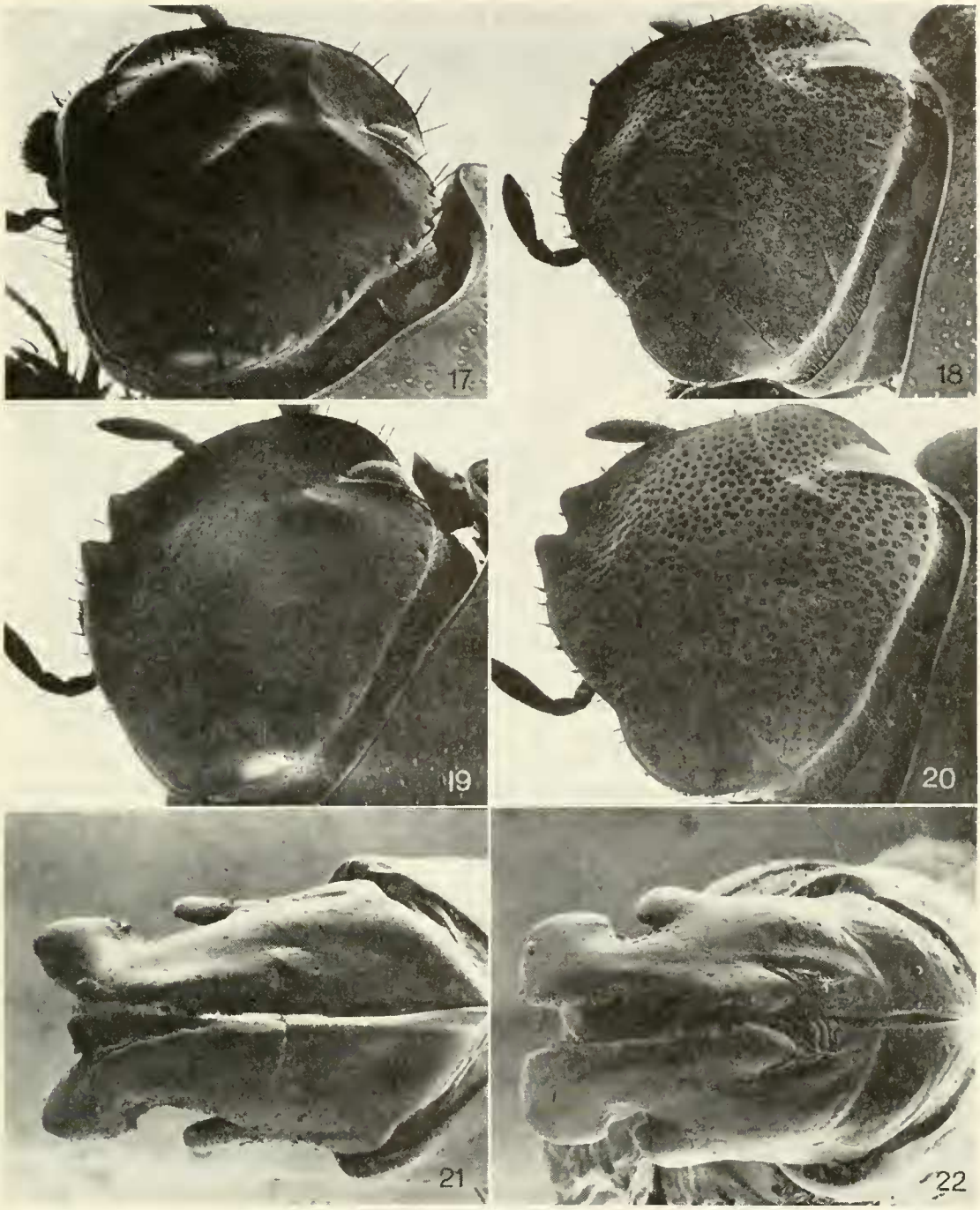

Fig. 17–22. *Drepanocerus* spp. 17, *D. pecki* n. sp., head of male. 18, *D. reconditus*, head of male. 19, *D. pecki*, head of female. 20, *D. reconditus*, head of female. 21, *D. pecki*, male genitalia. 22, *D. reconditus*, male genitalia.

ous, central seta. Scutellum minute. Elytra with striae obsolete, each stria indicated by vague line interrupted by large, shallow punctures. Elytral intervals flat, except 3rd and 5th slightly elevated, distinctly less so than in *reconditus*; elytral setae much finer and less conspicuous than in *reconditus*. Pygidium nearly as long as wide, lacking transverse ridge before base, basal ¼ more distinctly shining; surface of apical ¾ largely opague, minutely punctate-setose, dark shiny spot present medially near apex. Fore tibia with 2 large teeth on outer

margin in apical ½, a 3rd inconspicuous apical tooth present on anterior margin, and a 4th small tooth at middle of outer margin; in *reconditus* males, all 4 teeth are well developed, the basal 1 being the smallest. Ventral surfaces of thoracic and abdominal sterna and ventral surfaces of femora largely smooth and shining, at most few scattered setose punctures present, particularly on fore femur; in *reconditus* all sterna and femora have numerous coarse, setose punctures. Terminal abdominal sternite narrowed medially. Genitalia as in fig. 21, the apices of parameres more widely separated than in *reconditus* (fig. 22).

Allotype: Female, length 8.0 mm, greatest width 4.0 mm. Differing from male Holotype in the following major respects: clypeus shining and distinctly bidentate (fig. 19); clypeal and frontal carinae absent; frons and vertex nearly flat, opaque, and with few scattered, setigerous punctures; pygidium distinctly wider than long, median spot near apex shallowly concave; fore tibia with 4 distinct teeth, the basal 1 smaller; last abdominal segment not narrowed medially.

Type-Material: Holotype, ♂, Jamaica, St. Thomas, 2100 ft., Corn Puss Gap, 4 mi. N. Bath, 3–8 August 1974, S. Peck, Dung Traps #16–20 (Howden). Allotype, ♀, same data as Holotype (Howden). Paratypes: 246 ♂♂, 117 ♀♀. 117 ♂♂, 51 ♀♀, same data as Holotype; 129 ♂♂, 66 ♀♀, Jamaica, St. Andrew, Hermitage Dam, 1750 ft., 10–14 August 1974, S. Peck, Dung Traps #33–35. Paratypes will be deposited in a number of collections including the CNC, USNM, and Howden.

Variation in the series is mainly evident in size and associated heterogonic development of the carinae on the heads of the males. There are also slight average differences in the shape, particularly the width, of the carinae on the heads between males taken at Corn Puss Gap and ones taken at the Hermitage Dam. Males from Hermitage Dam often have the relative width of the anterior carina somewhat reduced. However, small males from either locality may have the anterior carina reduced to a median tubercle and the posterior carina only vaguely indicated by an indistinct transverse swelling. The size ranges in males from 7.0 to 10.0 mm in length and from 3.5 to 4.5 mm in greatest width; in females size varies from 7.3 to 9.8 mm in length and from 3.6 to 4.6 mm in greatest width. Color also varies, particularly in the degree of mottling. Seemingly older (more worn) specimens are usually darker, often almost black dorsally.

Drepanocerus pecki and *D. reconditus* Matthews are the only known New World representatives of *Drepanocerus*. Both are known only from Jamaica, *D. reconditus* seemingly occurring at higher elevations (4–5000 ft.) from Hardwar Gap to Portland Gap and *D. pecki* at lower elevations (1500–2500 ft.) from Hermitage Dam to Corn Puss Gap. The two species are easily separated. *Drepanocerus reconditus* has a heavily punctate head (fig. 20) with no obvious carinae in males (fig. 18), thoracic and abdominal sterna and femora are heavily punctate and the male genitalia (fig. 22) are distinctive; *Drepanocerus pecki* lacks the heavy punctation on the head (fig. 19), sterna and

femora; males usually have two transverse carinae on the head (fig. 17) and the male genitalia is characteristic.

The species is named for my colleague, Dr. Stewart Peck, who discovered the species.

Acknowledgments

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BOOK NOTICES

Insect Biochemistry and Function. 1975. D. J. Candy and B. A. Kilby (Eds.). 314 pp., illus. Halsted Press, 605 3rd Avenue, New York, N.Y. 10016. $25.00.

The 4 chapters and their contributors are: 1. Biochemistry of insect flight, Part 1; B. Sacktor, Baltimore, Maryland. 2. Same, Part 2; E. Bailey, Yorkshire, England. 3. Excretion in insects; D. G. Cochran, Blacksburg, Virginia. 4. Synaptic transmission in insects; G. G. Lunt, Somerset, England. A review of this book has been published by Sir Vincent Wigglesworth (Entomologists' Record, vol. 87:208, 1975).—A.B.G.

California Wasps of the Subfamily Philanthinae (Hymenoptera: Sphecidae). 1975. By R. M. Bohart and E. E. Grissell. Bulletin of the California Insect Survey, vol. 19: pp. 1–92, 151 figs., 46 maps. University of California Press. $3.50.

This important bulletin concerns one of the largest subfamilies of the Sphecidae, containing over 1,000 world species. In California 6 genera and 65 species are recorded, chiefly in *Cerceris* and *Philanthus*. All of the species are predaceous and nest in the ground, provisioning their nests with bees, other wasps, ants and beetles (especially weevils). Conditions found in and near deserts are especially suitable for them.—A.B.G.